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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,238	05/04/2006	Kyoji Kitamura	04473/005001	1946

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EXAMINER	
LAM, HUNG Q	
ART UNIT	PAPER NUMBER
2883	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/578,238	KITAMURA ET AL.	
	Examiner	Art Unit	
	Hung Lam	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/04/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

Claims 1- 20 are pending in this application.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on May 04, 2006 was filled in compliance with the provisions of 37 CFR 1.97. The examiner is considering the information disclosure statement.

If applicant is aware of any prior art or any other co-pending application not already of record, he/she is reminded of his/her duty under 37 CFR 1.56 to disclose the same.

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in Application No. 10/578,238, filed on May 04, 2006.

Drawings

There was no drawing filed in this application.

Specification

The specification is accepted as part of the formal application.

Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 8 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. For instance, the phrase of "and/or" in line 8 of claim 8 and line 3 of claim 13 is considered to be vague and indefinite because it fails to give understanding to whether the applicant is claiming elements should be considered in combination (*and*) or in alternate (*or*).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-10, 13, 19-20, are rejected under 35 U.S.C. 102(b) as being anticipated by **Watakabe et al.** (US. Pub. 2003/0198854).

Regarding claims 1, Watakabe et al. anticipates a process for producing an ion exchange resin made of polymer involving a method of prepared radical polymerization in a solvent compound of perfluorocyclohexane ([0025], [0074], [0080], [0084]).

Regarding claim 3, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the cured resin product is prepared from one or more monomers containing a perfluorocyclohexane ring (claim 1' rejection) and one or more radical polymerization groups ([0025]), e.g., the first and second initiator groups.

Regarding claim 4, in accordance with the rejection of claim 3, **Watakabe et al.** further disclose the cured resin product is prepared from one or more monomers containing a perfluorocyclohexane ring and one or more radical polymerization groups (above claim 3' rejection), and one or more fluorine-containing monomers containing no perfuorocyclohexane ring such as perfluorodecalin, since "...these solvents may be used alone or as a mixture of two or more of them" fluorine-containing monomers ([0074]-[0075], [0080], [0083]).

Regarding claims 5-8, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the cured-resin-product is prepared from a composition of a polymer or copolymer containing perfluorocyclohexane ring, wherein the polymer or copolymer is obtained by polymerization in anon-aqueous medium of solvent of one or more fluorine-containing monomers containing no perfluorocyclohexane ring and also containing two radical polymerization groups ([0015]-[0025], [0074]-[0084]).

Regarding claims 9-10, 19-20, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the cured resin product is prepared from a composite solvent of one or more monomers containing a perfluorocyclohexane ring and one or more radical polymerization groups (above claim 3' rejection), and one or more fluorine-containing monomers containing no perfuorocyclohexane ring such as perfluorodecalin dissolved in the composite solvent above,

since "...these solvents may be used alone or as a mixture of two or more of them" fluorine-containing monomers ([0074]-[0075], [0080], [0083]).

Regarding claim 13, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the radical polymerization method is a heat curing method ([0129]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negative by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 17-18, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watakabe et al.** in the view of **Holland et al.** (US. Pat. 3,868,408).

Regarding claim 2, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the claimed invention **except** for the limitation in which one or more perfluorocyclohexane rings derived from one of monosubstituted, disubstituted and trisubstituted monomer, are included as the perfluorocyclohexane ring.

Holland et al. disclose as new compositions of matter polymers wherein a formula C_6F_{10} represents a monosubstituted or disubstituted monomer perfluorocyclohexane ring (col. 2, lines 37-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teachings of **Holland et al.** in **Watakabe et al.** as to derive the perfluorocyclohexane ring from a compatible of the monosubstituted or disubstituted monomer. The motivation for doing so is because "...with a compatible monomer, by conventional polymerization techniques to obtain polymeric materials having useful characteristics including high thermal stability, high glass transition temperatures and hydrolytic stability", and also "...when monomers or polymeric materials prepared in accordance with the present invention are applied to suitable substrates" (Holland et al. col. 2 lines 45-55).

Regarding claims 17-18, in accordance with the rejection of claim 2, **Watakabe et al.** and **Holland et al.** further disclose the cured resin product is prepared from one or more

monomers or copolymers containing a perfluorocyclohexane ring, and either one or more radical polymerization group, or one or more monomers selected from fluorine-containing monomers containing two or more radical polymerization group ([0015]-[0025], [0074]-[0084]).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Watakabe et al.** in the view of **DeSimone et al.** (US. Pat. 6,747,179).

Regarding claim 11, in accordance with the rejection of claim 3, **Watakabe et al.** further disclose the claimed invention **except** for the radical polymerization group is an methacryloyloxy group.

DeSimone et al. disclose a random copolymer composes a fluorinated acrylate monomer and 2-(methacryloyloxy)ethyl acetoacetate (col. 5, line 55-56).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teachings of **DeSimone et al.** in **Watakabe et al.** as to select the methacryloyloxy as the radical polymerization group. The motivation for doing so is because these fluorinated acrylate monomer and methacryloyloxy "...can be synthesized via free radical solution polymerization initiated by 2,2'-azobisisobutyronitrile (AIBN) in. alpha.,. alpha., .alpha.-trifluorotoluene (TFT) at 60 degree of Celsius..." (DeSimone et al. col. 5 lines 56-60).

Claims 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watakabe et al.** in the view of **DeSimone et al.** (US. Pub. 2002/0119398).

Regarding claim 12, in accordance with the rejection of claim 3, **Watakabe et al.** further disclose the claimed invention **except** for the limitation of one or more radical

polymerization groups contains an alkylene group represented by general formula -$(CH_2)_n$- between the perfluorocyclohexane ring and the radical polymerization group.

DeSimone et al. disclose a coating method using self-assembling monolayer (SAMs) including a functionalized alkane thiols such as those represented by the formula: X-$(CH_2)_n$-S-H ([0013]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teachings of **DeSimone et al.** in **Watakabe et al.** as to provide the radical polymerization groups contains an alkylene group represented by general formula -(CH_2)n-, between the perfluorocyclohexane ring and the radical polymerization group. The motivation for doing so is by providing the coating method to a substrate with the teachings above, wherein n ranges from 1 to 1000, would provides a wide range of components/materials can be used to form a coating on the substrate (DeSimone et al. [0012]-[0014]).

Regarding claim 14, in accordance with the rejection of claim 3, **Watakabe et al.** further disclose the claimed invention **except** for the limitation of wherein Young's modulus of the cured-resin product is 2500 MPa or more. However, **DeSimone et al.** disclose the polymer resin is determined to be soluble at 5000 psi or 35 MPa ([0081]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the polymer resin is determined to be soluble at the pressure of 2500 MPa, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The motivation for doing so would be that high modulus is desirable in facilitating connectorization of optical fibers as known in the art.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watakabe et al.** in the view of **Suzuki et al.** (US. Pub. 2003/0026574).

Regarding claims 15-16, in accordance with the rejection of claim 1, **Watakabe et al.** further disclose the claimed invention **except** for the optical component composed of a cured-resin-product is an optical waveguide-like part, which is also prepared by stamper method. However, **Watakabe et al.** disclose a method of using pressing by means of a flat plate-pressing machine and further by heat pressing to obtain a membrane/electrode assembly/sandwiched ([0153]).

Suzuki et al. disclose an optical waveguide provided on a substrate, which comprise a core and a clad formed around the core, wherein the clad is made of a fluorinated alicyclic structure-containing polymer having functional groups and fluorinated-containing solvent such as perfluorocyclohexane ([0078]-[0081]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teachings of **Suzuki et al.** combined with the method of obtaining the membranes assembly of **Watakabe et al.** as same as using a cured-resin product in preparing an optical waveguide-like part by a stamper method. The motivation for doing so is because the optical waveguide can be obtained in the same manner as the optical cladding, and "...the core material, together with the fluorinated alicyclic structure-containing polymer having functional groups, a compound having a functional group reactive with the functional group, as a compound to increase the refractive index, the diffusion of the compound into the clad can be suppressed" (Suzuki et al. [0089]-[0091], [0094], [0101]).

Cited Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akama et al. (US. Pat. 6,403,744) disclose a composition for forming a component a fluorine-containing polymer/copolymer containing perfluorocyclohexane ring, and radical polymerization group.

Hansen et al. (US. Pat. 6,403,744) disclose a perfluoro(alkoxycycloalkane) carbonyl fluoride compounds wherein three trifluoromethoxy groups attached to the 3,4,5 position on a perfluorocyclohexane ring.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Lam whose telephone number is 571-272-9790. The examiner can normally be reached on M - F 07:30 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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